

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 86
(For Candidates admitted during the academic year 2019 – 2020)

SUBJECT CODE: 19EC/AC/SE15

B.A. DEGREE EXAMINATION NOVEMBER 2019
BRANCH IV – ECONOMICS
FIRST SEMESTER

COURSE : ALLIED - CORE
PAPER : STATISTICS FOR ECONOMICS
TIME : 3 HOURS

MAX. MARKS: 100

SECTION – A

ANSWER ANY TEN QUESTIONS. EACH ANSWER NOT TO EXCEED 50 WORDS
(10x2=20)

1. What is the multiplication law of probability?
2. What are the components of time series data?
3. What are the different types of correlation?
4. What is conditional probability?
5. Give an instance where t-testing can be done.
6. What is a Poisson distribution?
7. What is a random variable? Give an example.
9. $P(A+B)=P(A)+P(B)$. When will this hold? Explain.
10. What is hypothesis testing?
11. What is goodness of fit?
12. What kind of graph can you use to represent a time-series data?

SECTION – B

ANSWER ANY FIVE QUESTIONS. (5x8=40)

13. Calculate Pearson's correlation coefficient for the following:

X:	65	66	67	68	69	70	71
Y:	67	68	66	69	72	72	69

14. Nine items of a sample had the following values: 45, 47, 50, 52, 48, 47, 49, 53, 51.
Will the mean of these nine items be significantly different from the assumed population mean of 47.5?

15. Write the properties of the normal distribution.

16. Five dice are thrown 96 times. The number of times 4, 5 or 6 was actually thrown in the experiment is given in the following table:

4, 5 or 6	0	1	2	3	4	5
Observed frequencies	1	10	24	35	18	8

Fit a binomial distribution to the data.

17. What are the steps involved in hypothesis testing?

18. How will you test the overall significance of a regression model using ANOVA?
19. A man applied for a job in two firms X and Y. He estimated that the probability of his being selected in a firm is 0.7 and being rejected in Y is 0.5 and the probability that he will be selected in both the firms is 0.4. What is the probability that he will be selected in one of the firms?
20. Find out the trend values taking 5 yearly moving average and determine the short term oscillations from the following data:
- | | | | | | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Year | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 |
| Prodn | 14 | 17 | 22 | 28 | 26 | 18 | 20 | 24 | 25 | 29 | 30 | 23 |
- (in tons)

SECTION – C

ANSWER ANY TWO QUESTIONS.

(2x20=40)

21. Find out the regression lines from the following data:

X	89	86	74	65	65	63	66	67	72	79
Y	82	91.5	84	75	73.7	72	70.5	75	77.5	84

22. Find out the trend using least squares method and estimate the trend value for the year 1990.

Year	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985
Variable	18	22.8	26.4	33.0	23.5	27.4	39.4	51.9	64.8	77.1

23. Suppose the National Transportation Safety Board (NTSB) wants to examine the safety of compact cars, midsize cars, and full-size cars. It collects a sample of three for each of the treatments (cars types). Using the hypothetical data provided below, test whether the mean pressure applied to the driver's head during a crash test is equal for each types of car. Use $\alpha=5\%$

Compact cars	Midsize cars	Full-size cars
643	469	484
655	427	456
702	525	402

24. Explain the following: (each part contains equal marks)
- Bayes' Theorem
 - Least squares method
 - Expectation of a probability distribution
 - Standard error
